STEEL PRODUCTS MANUFACTURING AND FABRICATION QUALIFICATION AUDIT

NAME OF PRECAST PLANT:

DATE:

ADDRESS:

FACILITIES' AUTHORIZED QUALITY CONTROL REPRESENTATIVE(S):

_____

_____

_____

_____

CONTRACTOR'S QUALITY CONTROL MANAGER:

_____

_____

ORIGINAL OR FOLLOW-UP VISIT:

NAME(S) OF AUDITOR(S):

_____

In order to pass an audit, all the requests and audit forms must be complete and in conformance with the Contract Plans and Special Provisions.

Steel Manufactures and Fabricators, that do not produce fasteners, are not required to answer Sections M through L. Steel Fastener Manufactures, that do not make other steel products, are not required to answer Sections A through L. With the exception noted here for fasteners, the Contractor must answer "yes" to all audit questions and have written documentation to support the affirmative responses.

The passing of an audit performed by the Engineer shall consist of the Engineer's answer of "yes" to all questions, verification of the documentation to support the affirmative responses, and having all required submittals completed and in conformance with the Contract Documents.

The procedure for requesting another audit in the event of an audit failure is as specified in the Contract Special Provisions.

We the undersigned have read and understand the "Steel Products Manufacturing and Fabrication Qualification Audit", the Contract Plans, Special Provisions, and Engineer's Estimate pertaining to this audit and are providing the following information.

General Contractor **Date**

General Contractor's Quality Control Manager **Date**

Facility Authorized Representative **Date**

A. SPECIFICATIONS AND STANDARDS

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Fabricator/Manufacturer have a copy of CALTRANS specifications and are the Fabricator's personnel familiar with these specifications?				
2.	Does the Fabricator/Manufacturer have a copy of AWS D1.5-95 and 96, D1.1-96 and 98, and D1.4-92?				
3.	Does the Fabricator/Manufacturer have copies of all material specifications referenced in the contract (e.g. ASTM)?				
4.	Does the Fabricator/Manufacturer have personnel that are knowledgable and experienced with the material codes and specifications referenced in the contract?				
5.	Is there a written procedure in place to disseminate specification requirements and changes to appropriate personnel?				

B. READING / INTERPRETING SHOP DRAWINGS

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Fabricator/Manufacturer have personnel capable of supervising, evaluating and coordinating shop drawing preparation and review?				
2.	Do the shop drawings denote materials to be utilized in the final structure?				
3.	Do shop drawings identify fracture critical materials and welds, when applicable?				
4.	Do the materials and processes specified or indicated on the shop drawings agree with the contract documents material requirements for work ongoing in the shop?				

C. DRAWING CONTROL

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Fabricator or Manufacturer have a written procedure for tracking design drawings as follows. a. ____ receipt? b. ____ on file? c. ____ revisions?				
2.	Does the tracking procedure utilized trace each phase from drawing preparation, showing receipt, submittal for approval, approval, resubmittals and date sent to shop for fabrication?				
3.	Do the shop plans correspond to the latest revision?				

D. WORK ORDER – JOB CONTROL

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Fabricator/Manufacturer have an established job control number and identification system for all work completed and accepted by in-house QC?				
2.	Are all received correspondence marked with a distinguishable identifying mark?				
3.	Are correspondence files maintained and seggregated for each project?				
4.	Is received correspondence a. ____ stamped received? b. ____ dated? c. ____ initialed?				

E. MATERIAL PROCUREMENT AND SUBCONTRACTS

		YES	NO	NA	DETAILED INFORMATION
1.	Are purchase orders or any other type of materials procurement forms on file for verification and documentation of the orders?				
2.	Are all materials ordered or procured to the required standards and specifications specified in the corresponding contract documents?				
3.	Do the Fabricator's or Manufacturer's procurement documents require that his suppliers must furnish material testing reports (MTR's)?				
4.	Do the procurement documents state how the material should be marked and identified?				
5.	Are procedures in place to asssure that subcontracted fabrication is ordered to contract requirements?				

F. MATERIAL RECEIVING

		YES	NO	NA	DETAILED INFORMATION
1.	Is there an established written procedure for the reception of materials and subassemblies?				
2.	Are reception inspections done to all incoming materials and subassemblies arriving at this facility?				
3.	Does the materials and subassemblies receiving inspector confirms and documents the following: a. ____ proper grade of material? b. ____ proper material marking and identification? c. ____ proper material dimentions? d. ____ compliance with dimentional tolerances? e. ____heat numbers on material match heat numbers on corresponding mill certificates?				
4.	Are receiving inspections documented for: a. ____ acceptance and rejection ofnonconforming materials and subassemblies? b. ____ corrective actions taken to deal with non-correctable and correctable nonconformities observed during the reception inspection?				
5.	Are acceptance tolerances available for reference at the receiving inspection station?				

		YES	NO	NA	DETAILED INFORMATION
6.	Does the Fabricator or Manufacturer have a material identification system to assure control of materials of different grade and size (as applicable)?				
7.	Does the Fabricator or Manufacturer segregate controlled materials by project?				
8.	Does the Fabricator/Manufacturer have mill test reports (MTR's) for all material currently in fabrication?				
9.	Are MTR's traceable to stored or stocked material?				
10.	Are materials stored or stocked so as to prevent damage to the raw materials or final fabricated pieces?				
11.	Are the stored or stocked materials clearly marked or identified?				

G. EQUIPMENT/FACILITIES, HANDLING AND STORAGE PROCEDURES

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Fabricator or Manufacturer have adequate equipment to fabricate to the units on the contract plans for this contract? Attach list of the available equipment.				
2.	Is the material handling equipment adequate for the type of work being done?				
3.	Does the Fabricator or Manufacturer have adequate written procedures that describe or illustrate the proper way to: a. ____ handle materials in the yard? b. ____ handle materials in the plant? c. ____ move inprocess materials and subassemblies? d. ____ provide correct bracing and blocking for materials and subassemblies? e. ____ prevent material and subassembly deterioration? f. ____ provide correct storage for fabricated products? g. ____ handle and shipping of fabricated products?				

H. WELDING AND WELDING CONSUMABLES

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Fabricator/Manufacturer have welding procedure specifications and procedure qualification records (if applicable) per contract documents?				
2.	Are the Fabricator's/Manufacturer's welders certified in conformance with CALTRANS and AWS requirements?				
3.	Do the Fabricator's/Manufacturer's procedures address the requirements of AWS D1.5, Sections 2 "Design of Welded Connections" and 3.4 "Control of Distortion and Shrinkage"?				
4.	Is the Fabricator/Manufacturer aware of the fracture critical requirements of AWS D1.5, chapter 12, and of a fracture control plan, if applicable?				
5.	Are approved welding procedures readily available or posted near all welding machines?				
6.	Do welders know and understand which WPS is to be used with each specific weld?				
7.	Are welded structures and and specific welds traceable to the welder(s) and or welding crew that completed the job?				
8.	Does the Fabricator/Manufacturer have and properly maintain appropriate equipment for preheat and interpass heating?				
9.	Are maximum interpass and minimum WPS preheat temperatures properly monitored?				

		YES	NO	NA	DETAILED INFORMATION
10.	Are flame cut edges inspected by quality control inspectors to verify compliance with AWS D1.5, D1.1, D1.4?				
11.	Do quality control inspectors verify and document joint fit-up before welding?				
12.	Do the quality control inspectors verify and document the utilization of WPSs?				
13.	Are meters and other devices used to record or display welding variables checked for accuracy every three months?				
14.	Is the equipment used for verifying meters and other devices certified annually?				
15.	Are welding consumables stored in accordance with AWS D1.5, D1.1, or D1.4?				
16.	Are welding consumables at the work station protected from contamination and damage?				
17.	Does the Fabricator or Manufacturer control the exposure time of low-hydrogen SMAW electrodes following removal from hermetically sealed containers, drying ovens, or storage ovens?				
18.	Are consumable manufacturer certification reports on file and available?				

I. HIGH-STRENGTH BOLTING

		YES	NO	NA	DETAILED INFORMATION
1.	Are copies of the current RCSC and all appropriate ASTM Specification available?				
2.	Does a written procedure exist for sampling, testing, and approving high-strength fasteners and fastener components prior to use by the Fabricator or Manufacturer?				
3.	Does the Fabricator or Manufacturer have copies of all required test reports for fastener components (i.e., bolts, nuts, washers, and DTIs according to requirements in appropriate ASTM specifications)?				
4.	For each fastener component, has the Fabricator or Manufacturer been prequalified by Caltrans?				
5.	Does the Fabricator or Manufacturer have manufacturer's installation instructions for TC bolts and DTIs, if applicable?				
6.	Are written procedures available to conduct high-strength bolting: a. Installation verification tests? b. Rotational capacity test? c. Job inspection torque determination? d. long and short bolts testing?				

		YES	NO	NA	DETAILED INFORMATION
7.	Are procedures in place to perform installation verification tests of each lot of fasteners at a frequency as required in the RCSC Specification?				
8.	Does the equipment on hand for high-strength bolting, include: a. a bolt tension measuring device with appropriate bushings? b. a set of tapered feeler gages for inspecting DTIs? c. a torque wrench with dial or digital readout? d. a pneumatic or electric wrench with a positive mechanism that activates when proper tension is reached?				
9.	Has the contractor's bolting equipment (torque wrench, calibrated wrench, bolt load meter, torque multiplier) been calibrated by an accredited testing lab?				
10.	Is the accredited testing lab's. calibration equipment traceable to NIST standards?				
11.	Has each piece of equipment been calibrated within the past year?				
12.	Are calibration curves and plots on hand and is the accuracy of the equipment within acceptable tolerances?				
13.	If the turn-of-nut installation procedure is being used, is the match-marking procedure properly understood and utilized?				

		YES	NO	NA	DETAILED INFORMATION
14.	Is the sealing compound used to seal sheared ends of TC bolts: a. of the type recommended by RSCS? b. Applied to the correct thickness? c. Applied as soon as TC bolts have been sheared?				
15.	Has the paint used in faying surfaces been tested and qualified for the maximum thickness and the minimum cure time specified in the contract specifications for bolting plates?				
16.	Are procedures available to ensure that hot-dip-galvanized faying surfaces are: a. flat and free from runs or globs? b. roughened by hand wire brushing?				
17.	Will bolt tension of all completed bolted joints be inspected and documented immediately after each joint has been completed using the arbitration method of the RCSC Specification?				

		YES	NO	NA	DETAILED INFORMATION
18.	Are all fastener components properly stored and handled to ensure that: a. components are covered and protected from moisture? b. unused components are returned to their original containers at the end of each shift? c. different lots are stored separately to maintainintegrety between lots?				
19.	Does the Fabricator or Manufacturer use drill templates with hardened bushings when drilling bolt holes?				

J. COATING PROCESS

		YES	NO	NA	DETAILED INFORMATION
1.	Are the facilities and equipment suitable for performing cleaning and painting in conformance with the specfications for this contract?				
2.	Does a written procedure exist that addresses: a. measuring and recording temperature? b. measuring and recording humidity? c. measuring and recording wet film thickness? d. measuring and recording dry film measurements?				
3.	Are the facilities and equipment suitable for performing galvanizing in conformance with appropriate ASTM specifications?				
4.	Are thickness measurements of galvanized surfaces performed and documented?				
5.	Does a written repair procedure exist for repair of galvanizing holidays?				

K. QUALITY CONTROL AND QUALITY CONTROL INSPECTORS

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Fabricator or Manufacturer have a written Quality Control Manual that describes the company policy, support and commitment to quality?				
2.	Does the Fabricator or Manufacturer have a written job description and an organizational chart that reflects its commitment to quality?				
3	Does the Quality control Manual include sections that deal with: a. Contract review? b. Documents and drawings control? c. Materials purchasing? d. Product identification and traceability? e. Process control? f. Inspection and testing? g. Control of inspection, measuring and test equipment? h. Control of nonconforming products? i. Corrective and preventive actions? j. Handling and storage? k. Packaging and delivery? l. Internal audits? m. Manual review and update?				
4.	Does the Fabricator have a registered Certified Welding Inspector (CWI) on his full time staff or on contract?				

		YES	NO	NA	DETAILED INFORMATION
5.	Were Quality Control personnel available in the plant during this inspection audit as required in the Contract documents?				
6.	Does the Fabricator have certified NDT personnel on his full time staff?				
7.	Does the Fabricator have sub-contracts for all or part of his NDT?				
8.	Are the subcontractor's qualifications verified by the Fabricator?				
9.	Does the Fabricator or Manufacturer have certifications for all inspection personnel (staff and subcontractor) on file and readily available?				
10.	Does the Fabricator or Manufacturer have a copy of the written practice for NDT on file?				
11.	Does the written practice meet or exceed the recommendations of SNT-TC-1A?				
12.	Does the Fabricator or Manufacturer maintain documentation for all quality control testing?				
8.	Are the subcontractor's qualifications verified by the Fabricator?				

		YES	NO	NA	DETAILED INFORMATION
13.	Do quality control inspectors have sufficient equipment to adequately perform their tasks a. ____tape line? b. ____calipers? c. ____tag systems? d. ____fillet weld gages? e. ____chipping hammer? f. ____magnifying glass? g. ____amp tongs? h. ____paint gages? i. ____ flashlight? j. ____preheat & interpass temperature measuring and testing devices? k. ____mirror?				
14.	Does the Fabricator or Manufacturer have written procedures for: a. ____ minor repairs? b.____ major repairs? c ____ documentation for reinspection of repairs?				
15.	Are quality control personnel conversant with the quality control requirements?				
16.	Does the Fabricator or Manufacturer maintain a quality control program that is independent from production?				

		YES	NO	NA	DETAILED INFORMATION
17.	Do the quality control inspectors have the responsibility of informing line foreman and superintendent when observing any non-conforming work processes and performances?				
18.	Is the CWI given sufficient authority to stop work in order to prevent unacceptable work from proceeding?				

L. COMPLETED MEMBER STORAGE AND FINAL INSPECTION

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Fabricator or Manufacturer understand that there is a 48-hr. notification for final Caltrans inspection?				
2.	Is the Fabricator or Manufacturer aware that he must provide complete paper work, including a certificate of compliance and weights, for final inspection?				
3.	Does the Fabricator or Manufacturer have the material located and identified for final inspection?				
4.	Are completed members properly stored to prevent damage?				
5.	Are all primary load-carrying components traceable to MTR’s?				
6.	Does the Fabricator or Manufacturer understand that material release tags should be completed and attached only by the Engineer or his authorized representative?				

M. QUALIFICATION REQUIREMENTS FOR FASTENER MANUFACTURERS

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Manufacturer marks the fasteners, as required by ASTM specification, with a unique identification marking symbol that is registered with the U.S. Patent and Trademark Office?				
2.	Is the fastener Manufacturer currently certified to Quality System (QS) 9000?				
3.	Was the accreditation granted by an approved (Caltrans acknowledged) third party accreditation agency?				
4.	Was the Manufacturer certified using a (QS) 9000 Standard no older than the 3rd Edition?				
5.	Does the manufacturer have adequate facilities and machinery to manufacture the fastener components? Attach a list of the available equipment.				
6.	Does the manufacturer have adequate gages and quality control tools to evaluate the compliance of fastener components with specifications? Attach a list of the available equipment.				
7.	Have samples of all fastener components (or similar components) to be furnished for the contract been tested and approved by Caltrans prior to the Manufacturer producing fastener components for the contract?				
8.	Do appropriate personnel from the fastener manufacturer have a copy of the ASTM F1470 specification?				
9.	Did the Manufacturer personnel demonstrated knowledge and understanding of the ASTM F1470 specification?				

		YES	NO	NA	DETAILED INFORMATION
10.	Did the Manufacturer verify that all the Secondary Processors have detailed QC Plans and that they are certified to the QS 9000 standard?				
11.	Have all the Secondary Processors (including zinc coating processors and heat treaters) been audited by the fastener manufacturer to very compliance with Quality Control requirements??				
12.	Did the Manufacturer verify that the Secondary Processors have copies of all appropriate consensus standards for the product they are treating?				
13.	Are all fastener components and systems retested and recertified by the prime Manufacturer or Distributor after all secondary processing is completed?				
14.	Have all fastener components been tested by a testing laboratory acknowledge by Caltrans or recognized and approved by NIST?				
15.	Did the Manufacturer verify that the testing laboratory meets requirements of ISO/1EC Guides 25 and/or 58?				
16.	Did the Manufacturer verify that appropiate personnel from their testing laboratory have a copy of the ASTM F1470 specification?				
17.	Does the testing laboratory have testing procedures and copies of standard documents related to testing of fastener products?				
18.	Does the technician doing the testing have copies of the testing procedures?				

		YES	NO	NA	DETAILED INFORMATION
19.	Have samples of all test reports (as listed in appropriate ASTM specifications) been reviewed and approved by Caltrans?				
20.	Does the Manufacturer provides acceptable installation instructions for alternate fastener systems (i.e., TC bolts and DTI's) or fastener components?				
21.	Do lubricants used by manufacturer on zinc-coated products comply with Caltrans and ASTM requirements for: a.___Cleanliness and Dryness to touch? b. ___Color and dye? c.___Solubility in water?				
22.	What is type and model number of the lubricant?				

N. MATERIAL RECEIVING

		YES	NO	NA	DETAILED INFORMATION
1.	Is there an established written procedure for the reception of materials?				
2.	Are reception inspections done to all incoming materials arriving at this facility?				

		YES	NO	NA	DETAILED INFORMATION
3.	Does the manufacturer's inspector confirms and documents : a. ____ proper grade of material? b. ____ proper material marking and identification? c. ____ proper material dimensions? d. ____ compliance with dimentsional tolerances? e. ____heat numbers on material match heat numbers on corresponding mill certificates?				
4.	Are receiving inspections documented for: a. ____ acceptance and rejection ofnonconforming materials and subassemblies? b. ____ corrective actions taken to deal with non-correctable and correctable nonconformities observed during the reception inspection?				
5.	Are acceptance tolerances available for reference at the receiving inspection station?				
6.	Does the Manufacturer have a material identification system to assure control of materials of different heats, lots, and grade (as applicable)?				
7.	Does the Manufacturer keep each lot of material segregated and identify so as to maintain lot integrity of all metrials throughout the manufacturing process?				

		YES	NO	NA	DETAILED INFORMATION
8.	Does the Fabricator/Manufacturer have mill test reports (MTR's) for all material currently in fabrication?				
9.	Are MTR's traceable to stored or stocked material?				
10.	Are materials stored or stocked so as to prevent damage to the raw materials or completed fastener components?				
11.	Are the stored or stocked materials clearly segregated, and marked or identified by lot number?				

O. HANDLING AND STORAGE EQUIPMENT, FACILITIES, AND PROCEDURES OF MATERIALS AND MANUFACTURED PRODUCTS

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Manufacturer have adequate equipment to fabricate the to units on the contract plans for this contract? Attach list of the available equipment.				
2.	Is the material handling equipment adequate for the type of work being done?				

		YES	NO	NA	DETAILED INFORMATION
3.	Does the Manufacturer have adequate written procedures that describe or illustrate the proper way to: a. ____ handle materials in the yard? b. ____ handle materials in the plant? c. ____ move inprocess materials and subassemblies? d. ____ provide correct bracing and blocking for materials and subassemblies? e. ____ prevent material and subassembly deterioration? f. ____ provide correct storage for fabricated products? g. ____ handle and shipping of fabricated products?				

P. COATING PROCESS

		YES	NO	NA	DETAILED INFORMATION
1.	Are the facilities and equipment suitable for performing galvanizing in accordance with ASTM specifications?				
2.	Are thickness measurements of galvanized surfaces performed and documented?				
3.	Is the maximum coating thickness controlled so as not to be excessive?				
4.	Are suitable gages and instruments available to check various thread dimensions (thread pitch, major and minor diameters, etc.) after galvanizing?				

		YES	NO	NA	DETAILED INFORMATION
5.	Has lot integrety and segregation been maintained throughout the coating process? (i.e., each lot clearly marked and segregated before, during and after processing)				

Q. HEAT TREATING PROCESS

		YES	NO	NA	DETAILED INFORMATION
1.	Are the facilities and equipment suitable for performing heat treating in accordance with appropriate ASTM specifications?				
2.	Is the equipment adequate to produce a quality product with consistent hardness and a tight hardness range?				
3.	Is the equipment used for quenching and tempering adequate to control bath temperature, so as to produce fastener components with consistent hardness and metalurgical properties?				

R. QUALITY CONTROL AND QUALITY CONTROL INSPECTORS

		YES	NO	NA	DETAILED INFORMATION
1.	Does the Manufacturer have a written Quality Control Manual that describes the company policy, support and commitment to quality?				
2.	Does the Manufacturer have a written job description and an organizational chart that reflect its commitment to quality?				

		YES	NO	NA	DETAILED INFORMATION
3	Does the quality control manual include sections that deal with: a. Materials purchasing? b. Product identification and traceability? c. Process control? d. Inspection and testing? e. Control of inspection, measuring and test equipment? f. Control of nonconforming products? g. Corrective and preventive actions? h. Handling and storage? i. Packaging and delivery?				
4.	Is all quality control testing documented?				
5.	Are quality control personnel conversant in and understand the quality control requirements?				
6.	Is quality control independent from production?				

S. STORAGE AND FINAL INSPECTION OF COMPLETED FASTENER COMPONENTS

		YES	NO	NA	DETAILED INFORMATION
1.	Are manufactured products properly stored to prevent damage?				
2.	Are all components properly packaged and marked per ASTM requirements?				
3.	Are zinc-coated components of fastener systems properly packaged together as an assembly?				
4.	Has each assembly lot been tested as a rotational capacity lot and been given a Rocap lot number?				
5.	Is the Fabricator aware that he must provide complete paper work, including a certificate of compliance and weights, for final inspection?				